

NATIONAL REPORT

-CHINA-

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In order to attend the International Workshop on Seahorse Fishery Management in Mazatlan in February 2004 and write the National Report on Seahorses, ten branch offices of The Endangered Species Import and Export Management Office of the People's Republic of China (CNMA) were requested to investigate the catch, captive breeding and trade of seahorses in ten provinces along the Chinese coast from December 29, 2003 to January 29, 2004. The following report is a summary of the results.

I. Information on Wild Populations

There are seven species of seahorses in China (Meng *et al.*, 1995) (Table 1). Others report that six species of seahorses range in Chinese seas (Huang 1994). They are mainly distributed in areas around Taiwan, the South Sea and the East Sea of China. Several species occur in Yellow Sea and Pohai Sea of China. At this time, biological information is lacking and it is impossible to estimate the size of populations and their dynamics (CNSA, 2002).

Some species have been used as Traditional Chinese Medicine (TCM) or as tonics from as early as AC 502 and have been sold as whole dried specimens or as prepared medicines. All seven species of seahorses are listed as being TCM (Gao, 1996), but genuine TCM books record only five of them (NJMC, 1977; Gao, 1996) (Species in Table 1 with *). The common species used in TCM are *Hippocampus kuda*, *H. trimaculatus* and *H. japonicus*. A few species such as *H. abdominalis* have been introduced as aquarium fish or pet fish in recent years (Table 4).

II. Nature of Seahorse Fisheries

The main threats to seahorse populations are widespread declines in abundance as a result of habitat loss and overfishing. Other threats include bycatch in trawl fisheries, pollution and the degradation of mangroves, grass beds and reefs. Fishermen do not specifically target seahorses in China, and seahorses are collected as bycatch or during low tide. There are no records of annual harvests in China. According to this investigation, less than 6000 kg dried seahorses are harvested annually in some provinces (Table 2).

The estimation of the harvest suggests about 20 tons on average per year (Zhao, 2002, pers. comm.). The main wild harvests are from Guangdong, Guangxi and Zhejiang Provinces and the harvested specimens are sold countrywide. Other harvest regions include Putian and Tong-an of Fujian Province, and Laotin, Tangshan and Qinhuangdao of Hebei Province. Wild resources were rich in China before the

1960s and have decreased since the 1970s due to excessive harvest and habitat destruction (CNSA, 2002).

In 1988, one species, *H. kelloggi*, was listed as being protected species of national importance under Category II of the Chinese Wild Animal Protection Law, which allows for limited collection and trade only under special permit. There are no action plans or programs to protect or re-establish the population of seahorses in China but some *ex situ* breeding programs are being carried out by local governmental wildlife conservation agencies.

Captive Breeding of Seahorses

Captive breeding programs have been developing since the 1950s and during this investigation we learnt that some facilities have been built in Guangdong, Guangxi, Hainan, Fujian, Zhejiang, Shandong and Liaoning Provinces. The facility to produce the first captive-born seahorse (*Hippocampus trimaculatus*) in South China in 1957 was the Shantou mariculture Test Farm in Guangdong Province. In 1987, seahorses were successfully bred in captivity in Rizhao, a city of North China's Shandong Province (Zhang, 2000). Species in captivity are *Hippocampus kuda*, *H. trimaculatus*, and *H. japonicus*. These species could be bred in captivity but economic failure has forced breeding programs to remain in various stages of scientific research (CNSA, 2002). It has been reported in recent years that seahorse culture has been quite successful in some aquaculture companies in China (Ministry of Agriculture, 2002). More recently the test of aquaculture of seahorses has spread to Hainan, Guangdong, Fujian and Zhejiang Provinces. In order to make clear the actual situation of seahorse mariculture, a larger seahorses breeding facility was investigated by author from 21 to 24 May 2002. Guangdong Zhongda Richvast Bio-Tech. Co. Ltd. (ZRBT) (located at Lufeng City, Guangdong Province) began breeding research in 1995 and has produced seahorses since 1998. The main species in captivity is *H. kuda* and *H. trimaculatus*. F8 generations of *H. kuda* were born in 2001, which in turn could potentially give birth 8 times annually (Lu, 2002, pers. comm.).

Comparing captive seahorses with wild ones, many indexes increase significantly:

Growth rate increased 15%, pregnancy rate increased 50%, birth rate increased 60%, survival rate increased 30%, and brood rate increased 83.5%. The survival rate of one month young is 80% and that of more than one month is about 90%, the survival rate is as high as about 72%. The density of parent seahorses in captivity is 30 individuals/m³ and sex ratio is 1:1. The density of young is 200-250 individuals/m³. Hatching period is 20-25 days. The weight of an adult is 20-25g.

At present there are at least 6 seahorse aquaculture facilities in China. Some information is provided in Table 3. There are at least 1,906,800 seahorses in captivity and 27,200kg of dried seahorses are produced annually. A new and large breeding facility for seahorses is being built in Hainan, investing as much as 6,000,000 Chinese Yuan.

III. Extent of International Trade

The increase of domestic demand and international trade in traditional medicines is undoubtedly the chief cause for overexploitation of some species of seahorses worldwide. Vincent (1995) reported that the demand for seahorses for medicinal purposes increased ten-fold during the 1980s and have continued to grow by 8 to 10% annually in China alone and similar trends were likely to occur in other countries with

large Chinese populations. TCM is one of the main pressures but not the only one on seahorses.

It seems that an increasing number of seahorses are used as tonics by consumers but not for medicinal purposes. Dried seahorses can be found at most tourism locations along China's coasts. It is obvious that the demand in China has been increasing.

Table 4, 5 and 6 are export and import records for seahorses from Mainland China customs and CNMA (Fan *et al.*, 2002). The highest import quantity was 15,333kg in 1992 and the lowest 184kg in 1999 with an average of 5204kg/year. The major export countries in order of importance are Thailand, Philippines, Indonesia, India and Australia. It seems that imports have decreased in the last ten years (Fig. 1). The reason for this is unclear.

The largest quantity exported was 1,933kg in 1995 and the lowest was 7kg in 1999 (Fig. 2) with an average of 567kg/year. The main importers include Hong Kong and Macao. The import quantity is ten times as much as the export quantity in China (excluding export quantity of TCM with seahorses). It can be concluded that most of the dried seahorses imported into China are consumed in China.

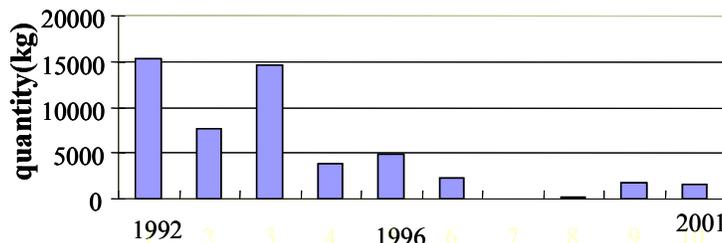


Fig. 1: The Import Of Dried Seahorses From 1992 To 2001

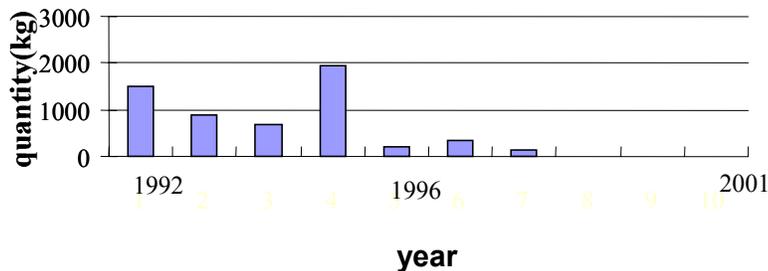


Fig. 2: The Export Of Dried Seahorses From 1992 To 2001

CITES Enforcement With Seahorses In Appendix II

Seahorse import and export have been monitored in Mainland China since 1998 when all species of seahorses were on the HS Commodity List of Import and Export of Wild Fauna and Flora in China. In China, non-CITES permits control the international trade of seahorse specimens. It will not be difficult for the CITES Management Authority of China to enforce CITES after May 15, 2004 when listing seahorses

in Appendix II will become effective. China will implement this by replacing the non-CITES permits with CITES permits. Problems that are anticipated to arise for customs include the species-wise identification and recording of the live and dried specimens with new harmonized codes, which require a new monitoring system. It is also important to identify a minimum size criterion for specimens of all seahorse species in trade and the minimum size must be developed separately for each species. These technical issues need to be discussed in detail.

Table 1: The Species of Seahorses in China and Used in TCM

Common Name	Scientific Name	Detail Distribution
	<i>Hippocampus kelloggi</i> *	Coastal areas along Guangdong, Fujian and Taiwan
	<i>H. kuda</i> *	Coastal areas along Guangdong and Hainan
	<i>H. trimaculatus</i> *	Coastal areas along Guangdong and Fujian
	<i>H. histrix</i> *	Coastal areas along Guangdong and Fujian
	<i>H. japonicus</i> *	Coastal areas along Guangdong, Shandong, Hebei and Liaoning
	<i>H. coronatus</i>	Coastal areas of Shandong, Hebei and Liaoning, Zhejiang and Jiangsu
	<i>H. erinaceus</i>	The Taiwan Straits

Table 2: Seahorse Harvest in China

Province	Trend	Harvest	Individual/ year	Kg/ year (dried)
Hainan	Decrease	Bycatch, collection	Less than 5000 (alive)	Less than 200
Guangdong	Decrease	Bycatch, collection	Some (alive)	Less than 1000
Guangxi	Almost disappeared inshore	Bycatch	80000-120000	1000-1600
Zhejiang	Decrease	By-catch	200000	3000
Fujian	Almost disappeared	By-catch	A few	A few
Jiangsu	Almost disappeared	By-catch	No data	No data
Shandong	Almost disappeared	By-catch	No data	Less than 10
Liaoning	Almost disappeared	By-catch	No data	A few
Tianjin	Disappeared			
Hebei	Almost disappeared	By-catch	No data	No data

Table 3: Seahorse Aquaculture Facilities In China

Information	Zhongda Richvast	Green Herbs	Pingtian	Wenzhou	Dongshan	Xiangshan
Province	Guangdong	Hainan	Fujian	Zhejiang	Zhejiang	Zhejiang
Species	<i>H. kuda</i> , <i>H. trimaculatus</i>	<i>H. kuda</i>	<i>H. kuda</i>	<i>H. trimaculatus</i>	<i>H. trimaculatus</i>	<i>H. trimaculatus</i>
Year Built	1995	1997	2000	1998	1997	1998
First Birth	1998	1998	2001	1999	1998	1999
First Products	1998	2000		2000	1999	2000
Scale Products	1999	2002		2002	2002	2002
Numbers in Captivity (individuals)						
1999	530000					
2000	780000					
2001	1000000					
2002	1600000	60000				
2003	1700000	80000	6000	40,800	50,000	30,000
Output (kg)						
1999	8000					
2000	11700					
2001	15000					
2002	24000	650				
2003	25000	700		600	600	300
Output Value (Chinese Yuan)						
1999	12,834,000					
2000	18,765,000					
2001	24,560,000					
2002	42,110,000	200,000				
2003	43,200,000	250,000				

Table 4. The import and export of seahorses and seadragons in 2000 and 2001*

Common name	Scientific name	description	quantity	unit	Country (region)
Import in 2001					
	<i>H. kelloggi</i>	Dried body	1000	Kg	Thailand
	<i>H. histrix</i>	Dried Body	100	Kg	Thailand
	<i>H. spp.</i>	TCM	80000	Bottle	Hong Kong
	<i>H. spp.</i>	TCM	80000	Bottle	Hong Kong
	<i>H. abdominalis</i>	Live	20	Piece	Australia
	<i>Phycodurus eques</i>	Live	30	Piece	Australia
	<i>Phylloteryx taenialatus</i>	Live	30	Piece	Australia
Export in 2001					
	<i>H. japonicus</i>	Powder	180	Kg	Japan
	<i>H. kelloggi</i>	Powder	180	Kg	Japan

* Data from CNMA, neither import nor export in 2000 according to the data from CNMA

Table 5: Import Data Of Dried Seahorses From 1992 To 2001 (Lack Of Data In 1998)*

Year	Country (region)	Quantity (kg)	Sum (US\$)
1992	Total	15333	876653
	Hong Kong	280	27700
	India	1315	512
	Indonesia	1069	142610
	Japan	212	44647
	Philippines	4180	6897
	Thailand	8229	640803
	Australia	44	13366
	Other	4	118
1993	Total	7708	936810
	Hong Kong	150	22500
	India	869	34913
	Indonesia	427	59489
	Singapore	21	5350
	Thailand	6241	814558
1994	Total	14545	1264047
	Hong Kong	2618	440479
	Macao	15	369
	Indonesia	843	108188
	Singapore	290	47192
	Thailand	6611	646180
	Australia	4168	21639
1995	Total	3815	523696
	Hong Kong	770	124380
	Indonesia	295	29064
	Thailand	2715	360556
	Singapore	35	9696
1996	Total	4904	569214
	Indonesia	90	8575
	Japan	931	601
	Singapore	89	18627
	Thailand	3794	541411
1997	Total	2290	143934
	India	50	5250
	Indonesia	330	1320
	Japan	270	1080
	Thailand	1410	135690
	Taiwan	230	594
1998	No data		
1999	Total	184	23735
	Indonesia	184	23735
2000	Total	1690	104068
	Thailand	1690	104068
2001	Total	1568	192451
	Thailand	1568	192451
Ten years	Total	52037	4634608

* Data from customs

Table 6: Export Data Of Dried Seahorses From 1992 To 1999

Year	Country (Region)	Quantity (kg)	Sum (US\$)
1992	Total	1489	5541
	Hong Kong	1485	4194
	Kazakhstan	4	1347
1993	Total	896	2177
	Hong Kong	896	2177
1994	Total	685	3044
	Hong Kong	345	1531
	Macao	340	1513
1995	Total	1933	261729
	Hong Kong	1832	261312
	Macao	101	417
1996?	Total	196	670
	Japan	180	298
	Macao	15	97
	Azerbaijan	1	275
1997	Total	329	2162
	Hong Kong	227	586
	Macao	55	330
	Taiwan	47	1246
1998	Total	139	11849
	Hong Kong	44	35
	Macao	5	23
	Korea	90	11791
1999	Total	7	234
	USA	7	234
2000	No data		
2001	No data		
Ten years	Total	5674	287406

* Data from customs

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